WHAT IS CLAIMED IS:

1. A digital automatic white balance device comprising:

a timing controller for receiving a vertical synchronization signal and a horizontal synchronization signal of an input image inputted to the device, and producing a timing control signal;

an RGB multiplier for multiplying input RGB image data inputted to the device by received RGB gains corresponding respectively to RGB channels;

a first YCbCr averaging unit for converting input RGB image data inputted to the device to YCbCr image data, and then obtaining first YCbCr averages Y1avg, Cb1avg and Cr1avg of this YCbCr image data;

a second YCbCr averaging unit for converting output RGB image data outputted from the RGB multiplier to YCbCr image data, and then obtaining second YCbCr averages Y2avg, Cb2avg and Cr2avg of this YCbCr image data; and

an RGB gain controller for comparing the second YCbCr averages with predetermined target YCbCr averages, respectively, according to the timing control signal from the timing controller, and obtaining RGB gains, corresponding respectively to the channels, on the basis of the first YCbCr averages, according to the compared result, and then providing the obtained RGB gains to the RGB multiplier.

2. The device according to claim 1, wherein the first YCbCr averaging unit includes:

a first RGB-to-YCbCr converter for converting the input RGB image data to YCbCr image data; and

a first YCbCr averager for obtaining first YCbCr averages of the YCbCr image data from the first RGB-to-YCbCr converter.

3. The device according to claim 1, wherein the second YCbCr averaging unit includes:

a second RGB-to-YCbCr converter for converting the output RGB image data to YCbCr image data; and

a second YCbCr averager for obtaining second YCbCr averages of the YCbCr image data from the second RGB-to-YCbCr converter.

4. The device according to claim 1, wherein different operations of the RGB gain controller are selected depending on whether "RGB gain enable or disable" is set, so that if the RGB gain enable is set, the RGB gain controller recalculates and provides RGB gains, and if the RGB gain disable is set, the RGB gain controller provides predetermined basic RGB gains.

5. The device according to claim 1, wherein the RGB gain

controller has preset coarse, fine and lock ranges, and if the second YCbCr averages are within the coarse or fine ranges, the RGB gain controller recalculates RGB gains corresponding respectively to the channels, and provides them to the RGB multiplier, and on the other hand, if the second YCbCr averages are within the lock range, the RGB gain controller provides previous RGB gains, corresponding respectively to the channels, to the RGB multiplier.

6. The device according to claim 5, wherein if the second YCbCr averages are within the coarse range, the RGB gain controller changes Y/Cb/Cr steps on the basis of a predetermined coarse step, and then calculates the RGB gains, corresponding respectively to the channels, on the basis of the changed Y/Cb/Cr steps, the first YCbCr averages, and the target YCbCr averages.

7. The device according to claim 6, wherein the RGB gain controller compares the second YCbCr averages with the target YCbCr averages, and changes the Y/Cb/Cr steps by adding or subtracting the coarse step to or from the Y/Cb/Cr steps on the basis of the compared result, and then calculates the RGB gains, corresponding respectively to the channels, on the basis of the changed Y/Cb/Cr steps, the first YCbCr averages, and the target YCbCr averages.

8. The device according to claim 7, wherein the RGB gain controller calculates the RGB gains on the basis of a predetermined A/D conversion resolution (2^N-1), the changed Y/Cb/Cr steps, the first YCbCr averages, and the target YCbCr averages.

9. The device according to claim 5, wherein if the second YCbCr averages are within the fine range, the RGB gain controller changes the Y/Cb/Cr steps on the basis of a predetermined fine step, and then calculates the RGB gains, corresponding respectively to the channels, on the basis of the changed Y/Cb/Cr steps, the first YCbCr averages, and the target YCbCr averages.

10. The device according to claim 9, wherein the RGB gain controller compares the second YCbCr averages with the target YCbCr averages, and changes the Y/Cb/Cr steps by adding or subtracting the fine step to or from the Y/Cb/Cr steps on the basis of the compared result, and then calculates the RGB gains, corresponding respectively to the channels, on the basis of the changed Y/Cb/Cr steps, the first YCbCr averages, and the target YCbCr averages.

11. The device according to claim 10, wherein the RGB

gain controller calculates the RGB gains on the basis of a predetermined A/D conversion resolution (2^N-1), the changed Y/Cb/Cr steps, the first YCbCr averages, and the target YCbCr averages.